



Docket No.: 1254-0327PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Kazuwa NAKAO et al.

Application No.: 10/594,763

Confirmation No.: 6725

Filed: September 29, 2006

Art Unit: N/A

For: COMPOSITION FOR INCREASING BODY
HEIGHT

Examiner: Not Yet Assigned

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Subsequent to the filing of the above-identified application on September 29, 2006, attached hereto is an English translation of the International Preliminary Report on Patentability (Form PCT/IB/338 and 373) and of the Written Opinion of the International Searching Authority (Form PCT/ISA/237) that should be made of record in the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any

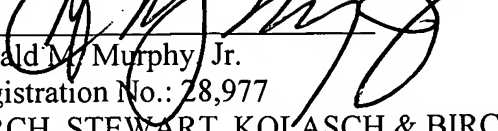
Application No.: 10/594,763

Docket No.: 1254-0327PUS1

additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated: DEC 28 2006

Respectfully submitted,

By 
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Attachment(s)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference PH-2443-PCT	FOR FURTHER ACTION	See item 4 below
International application No. PCT/JP2005/006837	International filing date (<i>day/month/year</i>) 31 March 2005 (31.03.2005)	Priority date (<i>day/month/year</i>) 31 March 2004 (31.03.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant NAKAO, Kazuwa		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																								
2.	This REPORT consists of a total of 6 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 19 October 2006 (19.10.2006)
Facsimile No. +41 22 338 82 70	Authorized officer <div style="text-align: center; font-weight: bold;">Yoshiko Kuwahara</div> e-mail: pt07@wipo.int

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing
(day/month/year)

Applicant's or agent's file reference

PH-2443-PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2005/006837

International filing date (day/month/year)

31.03.2005

Priority date (day/month/year)

31.03.2004

International Patent Classification (IPC) or both national classification and IPC

Applicant

NAKAO, Kazuwa

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP	Authorized officer
Facsimile No.	Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/006837

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐

This opinion has been established on the basis of a translation from the original language into the following language

_____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☒

a sequence listing

☐

table(s) related to the sequence listing

b. format of material

☐

in written format

☒

in computer readable form

c. time of filing/furnishing

☐

contained in the international application as filed.

☒

filed together with the international application in computer readable form.

☐

furnished subsequently to this Authority for the purposes of search.

3. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/006837

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 11-17, 22

because:

☒ the said international application, or the said claims Nos. 11-17, 22
relate to the following subject matter which does not require an international preliminary examination (*specify*):

The inventions of claims 11-17 and 22 concern a treatment of the human body by therapy.

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____
are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. _____ are so inadequately supported
by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 11-17, 22

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/006837

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	18-21	YES
	Claims	1-10	NO
Inventive step (IS)	Claims		YES
	Claims	1-10, 18-21	NO
Industrial applicability (IA)	Claims	1-10, 18-21	YES
	Claims		NO
2. Citations and explanations:			
(Documents)			
<ol style="list-style-type: none"> 1. JP 2003-113116 A (Hitokazu NAKAO) 18 April 2003 2. Clinical Calcium, 2002, Vol. 12, No. 3, p. 352-355 3. Proc. Nat. Acad. Sci. USA, 2001, Vol. 98, No. 7, p. 4016-4021 4. Journal of Biological Chemistry, 1998, Vol. 273, No. 19, p. 11695-11700 			
(Commentary)			
<u>Claims 1-10</u>			
<p>Based on the descriptions in documents 1-4 cited in the international search report, the inventions of claims 1-10 lack novelty and an inventive step.</p> <p>Document 1 describes a CNP transgenic mouse with increased expression of CNP, which is one type of substance that activates guanylyl cyclase B, and it states that in comparison with wild-type mice of the same litter, the following were observed in these transgenic mice: the distance between the nose and the anus was greater; at 6 months of age the length of the extremities, length of the vertebrae, and length of the long axis of the cranium were extremely greater; and in 3 weeks thereafter, the height of the growth plates of the long bones and vertebrae had increased, and the length of the hypertrophic chondrocyte layer and proliferative chondrocyte layer of the tibia had increased; fetal tibial length was greater; and major axis length of fetal tibial fragments by culturing showed pronounced growth. Document 1 also states that these effects were extinguished by a CNP receptor agonist.</p> <p>Documents 2 and 3 state that CNP-deficient mice exhibit dwarfism and narrowed growth plate cartilage, and the emergence of these cartilage abnormalities can be blocked by expression of CNP. In addition, document 2 states that in CNP overexpressing mice an increase in body length was seen due to the progression of endochondral ossification.</p> <p>Document 4 states that because CNP increases total body tubular bone length by increasing cGMP production, the guanylyl cyclase B/CNP pathway is important for endochondral ossification.</p>			
(Continued in supplemental box)			

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/006837

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V.

In addition, this authority finds that based on the descriptions in documents 1 and 4, it is obvious to persons skilled in the art to verify the kind of activity described in documents 1-4 in compounds other than CNP having a guanylyl cyclase B activating effect.

Claims 18-21

None of the documents cited in the international search report describes the inventions of claims 18-21, and therefore these inventions are novel, but based on the descriptions in documents 1-4 cited in the international search report, the inventions of claims 18-21 lack an inventive step.

Documents 1-3 each state that CNP transgenic mice with enhanced expression of CNP, which is one type of substance that activates guanylyl cyclase, exhibit an increase in body length and progression of endochondral ossification, and CNP-deficient mice exhibit dwarfism and narrowed growth plate cartilage, and the emergence of these cartilage abnormalities can be blocked by expression of CNP.

Document 4 states that because CNP increases total body tubular bone length by increasing cGMP production, and therefore the guanylyl cyclase B/CNP pathway is important for endochondral ossification.

This being the case, this authority finds that persons skilled in the art can easily conceive of using an effect on guanylyl cyclase B activity, such as an effect on cGMP production and the like, as an indicator to screen for compounds having the effect of increasing body length, and in that process employing a commonly used cultured cell system as the screening system for the same.